

## ABSTRACT

A highly reliable semiconductor chip electrode structure allowing control of interface reaction of bonding sections even in the case of using two or three-element solder used conventionally is disclosed. A solder alloy making layer for preventing dissolving and diffusion of tin into  
5 tin-based lead free solder is thinly formed on a UBM layer. The tin-based solder is supplied in solder paste or solder ball form. A combined solder alloy layer composed of a combination of intermetallic compounds, one of tin and the solder alloy making layer, and one of tin and the UBM layer, is  
10 formed by heating and melting.